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EXAMINER	
HA, YVONNE QUY M	

ART UNIT	PAPER NUMBER
2664	12

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/512,562	FICHOU ET AL.	
	Examiner	Art Unit	
	Yvonne Q. Ha	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Claims 1-30 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klausmeier et al (US Patent 6,201,813) in view of Kos (US Patent 5,696,761).

Referring to Claims 1 and 18, Klausmeier discloses assembling, in the ingress node (figure 2, queue circuit, cell input- reference 116), a plurality of consecutive segmented data frames belonging to the same flow of data transmitted (figure 2, interface unit 1-32; col. 5, line 44-67, segmentation engine, and frame extraction of figure 5) from the sending unit; de-assembling the assembled data frame, in the egress node (figure 2, queue circuit, cell output- reference 118) into consecutive segmented data frames (col. 5, lines 56-59; figure 5- Reassembly engine ref. 140, SAR unit- ref. 200). Klausmeier failed to disclose a backbone wherein the data are transmitted over high speed links between ingress and egress nodes and an egress node connected to the receiving node by a second low speed access link. However, Kos discloses method of transmitting data frames from a sending unit (figure 2, ref. 6, 26) to a receiving unit in a data transmission network (figure 2, ref. 6, 30) comprising at least a backbone wherein the data are transmitted over high speed links (figure 2, link interface, from ref. 24, 28, 35) enabling long

Maximum Transmission Units (MTU) between an ingress node connected (figure 2, ref. 24, 26, 30) to the sending unit by a first access link (figure 2, ref. 32) and an egress node connected to the receiving node by a second access link (figure 2, ref. 24, 30, 6), with at least one of the first and second access links being a low speed access link (col. 2, lines 45-46) requiring the data frames to be segmented into short MTUs (col. 4, lines 56-60, i.e. multiplex defined by Newton's dictionary as "assembles a packet containing data on the source node", i.e. ingress; demultiplex defined by Newton's dictionary as "disassembles a packet containing data on the destination node", i.e. egress) between the sending unit/the ingress node and between the egress node/the receiving unit, the method comprising the steps of assembling, in the ingress node, a plurality of data frames (col. 5, lines 11-13, figure 3) from the sending unit to the ingress node into an assembled data frame corresponding to one of the long MTUs, transmitting, the assembled data frame over the backbone from the ingress node to the egress node at a high speed authorized by the backbone links (col. 5, line 14-20), demultiplexing the assembled data frame (col. 5, lines 29-39, i.e. demultiplex defined by Newton's dictionary as "disassembles a packet containing data" from high speed mapping to the low speed links then to the module) corresponding to the short MTUs, and, transmitting, the data frames from the egress node to the receiving unit (col. 5, lines 46-52). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Klausmeier segmentation and assembly of data frames with Kos multiplex defined by Newton's dictionary as "assembles a packet" and demultiplex defined by Newton's dictionary as "disassembles a packet" via a backbone where high speed and low speed of data are mapped at each end point. Transferring of data from high speed to low speed involves in the process of grouping data together at high speed and regrouping the data back to

its low speed at the egress node. It is conventional to multiplex the data and transmit across an optical network at high speed and demultiplexing the data at the egress node, back to its original state.

Referring to Claim 2, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling step comprises the steps of defining in the assembled data frame a plurality of assembled parts each of them comprising a data field containing the data of the corresponding frame of the plurality of consecutive segmented data frames (figure 1, ref. 26, ref. 18-24) and an assembly header containing at least the length of the assembled part, and defining a main protocol header preceding the plurality of assembled parts (figure 1, ref. 38) and containing the same protocol information as the protocol headers of the segmented data frames and new information relating to the assembled data frame (col. 5, line 44-45).

Referring to Claim 3, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling step comprises the step of building the assembly header of each assembled part as a differential header, with respect to the main protocol header, including one position field giving the position of the first byte different from the main protocol header, one length field giving the number of consecutive bytes different from the main protocol header and all the consecutive different bytes identified by the position and length fields (col. 2, lines 10-19).

Referring to Claims 4 and 5, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling step comprises the step of gathering as many consecutive data frames belonging to the same flow as necessary to have a total size of all these frames equal to or just below a predetermined limit corresponding to the one of the long MTUs (col. 6, lines 11-15).

Referring to Claim 6, Klausmeier discloses all aspects of the claimed invention and further teaches the step of assembling a plurality of consecutive data frames belonging to the same flow of data includes the step of looking up a table stored in the ingress node to check whether there is an entry in the table corresponding to the flow of data (col. 4, lines 55-60).

Referring to Claim 7, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling step comprises the step of creating the entry in the table when the first frame of the flow of data is received by the ingress node (col. 5, lines 4-7).

Referring to Claim 8, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling step comprises the step of storing the plurality of consecutive data frames belonging to the same flow of data in a frame buffer allocated in the ingress node, before being assembled into the assembled frame when the total size reaches the predetermined limit (col. 5, lines 4-7).

Referring to Claim 9, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling comprises the step of storing each one of the plurality of frames in a location of the frame buffer which is defined by a next buffer field in the location of the buffer in which is stored the preceding frame of the plurality of frames (col. 4, lines 63-67, col. 5, lines 1-7).

Referring to Claim 10, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling step comprises the step of defining in each location in the frame buffer a field containing the size of the data of the corresponding frame (col. 5, lines 63-67).

Referring to Claims 11 and 20, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling step comprises the step of defining in the entry in the table

defining the flow of data an << origin >> field pointing to the address of the location wherein is stored the first frame of the plurality of frames stored in the frame buffer and a <<buffer address >> field pointing to the address of the location in the frame buffer in which the current frame is to be stored (col. 5, lines 9-22).

Referring to Claims 12 and 22, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling step further comprises the step of defining in the entry in the table a <<timer >> field defining a time counter which is set at a predetermined value when the first frame of the plurality of frames is received by the ingress node and which is regularly decremented until zero, the step of assembling the assembled frame being performed if the predetermined value is reached before the total size has a value equal to or just below the predetermined limit (col. 6, lines 13-22).

Referring to Claim 13, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling step of periodically decrementing the << timer >> fields in all entries of the table and checking whether the value of each decremented << timer >> field is zero (col. 6, lines 13-22).

Referring to Claims 14, 15, 25, and 29, Klausmeier discloses all aspects of the claimed invention and further teaches the step of identifying the protocol of each frame received by the ingress node and performing the step of assembling the consecutive segmented frames belonging to the same flow of data only if the protocol of the received frame is identified (col. 5, lines 44-50, segmented with protocol ID; col. 6, lines 54-63, reassembly with protocol).

Referring to Claims 16 and 17, Klausmeier discloses all aspects of the claimed invention and further teaches the step of de-assembling the assembled data frame in the egress node

consists for each assembled part of the assembled frame, in building the frame header of each segmented frame by using the main protocol header and the differential header of the assembled part the data of the segmented frame being the data of the assembled part (col. 6, lines 54-67, reassembly with protocol; col. 7, lines 1-5).

Referring to Claim 19, Klausmeier discloses all aspects of the claimed invention and further teaches the assembling instrumentalities comprise a storage unit storing a table wherein each entry is allocated to each flow of data and contains information on the flow of data, a frame buffer for storing each segmented frame of the plurality of frames, a list of pointers pointing to the free locations of the frame buffers and a FIFO for storing consecutive processed frame data for building the assembled frame data (col. 2, lines 57-67), a lookup unit for looking up the table to find the entry corresponding to a given frame or creating a new entry if necessary (col. 6, lines 6-14, end of frame detection unit and frame notification FIFO), a frame processing unit receiving the plurality of consecutive segmented data frames and, for each frame, requesting its corresponding data flow information to the lookup unit and storing frame data in the frame buffer using the list of pointers to find a free frame buffer entry (col. 6, lines 6-22), and an assembly processing unit reading all the data frames stored in the frame buffer by the frame processing for a given data flow, processing them, storing them in the FIFO and reading them to build and send the assembled data frame (col. 6, lines 24-27).

Referring to Claim 21, Klausmeier discloses all aspects of the claimed invention and further teaches the entry in the table includes a << total size >> field storing the total size of the consecutive segmented frames of the same flow, the segmented frames being processed into the

assembled data by the assembly processing unit associated with the FIFO as soon as the value of the << total size >> field is equal or just below a predetermined limit (col. 6, lines 15-19).

Referring to Claim 23, Klausmeier discloses all aspects of the claimed invention and further teaches each location of the frame buffer includes, further to the header and the data of the frame, a << next buffer >> field defining the location in the frame buffer in which the next frame is to be stored and a << data size >> field containing the size of the data of the stored frame (col. 6, lines 19-32, local processor to monitor the FIFO activity, and may allocate memory within the reserved locations when the last cell has been detected).

Referring to Claim 24, Klausmeier discloses all aspects of the claimed invention and further teaches the assembly processing unit builds a main protocol header for the assembled data frame and a plurality of assembled parts, each assembled part including a differential header with respect to the main protocol header and the data of the corresponding segmented frame, the assembled parts being serially stored in the FIFO and the assembled parts preceded by the main protocol header being serially transmitted over the backbone when the last assembled part of the assembled frame has been stored in the FIFO (col. 6, lines 54-63).

Referring to Claims 26 and 30, Klausmeier discloses all aspects of the claimed invention and further teaches the egress node comprises de-assembling instrumentalities comprising assembled frame processing for identifying the protocol of the frame received by the egress node, a header processing unit for building the protocol header of each segmented data frame to be transmitted from the egress node to the receiving unit, a data handling unit for segmenting the data of the assembled data frame into the data fields of the segmented frames and a frame buffer

for storing each re-built segmented frame before transmitting it to the receiving unit (col. 6, lines 54-67).

Referring to Claims 27 and 28, Klausmeier discloses all aspects of the claimed invention and further teaches the assembly processing unit comprises building instrumentalities to build a main protocol header for the assembled data frame and a plurality of assembled parts, each assembled part including a differential header with respect to the main protocol header and the data of the corresponding segmented frame, the assembled parts being serially stored in the FIFO and the assembled parts preceded by the main protocol header being serially transmitted over the backbone when the last assembled part of the assembled frame has been stored in the FIFO (col. 6, lines 15-23; lines 54-67).

Response to Arguments

Applicant's arguments with respect to claims 1 and 18 have been considered but are not persuasive due to the following reasons:

Regarding to argument on page 3, lines 2 and 17, the applicant argues that Klausmeirer or Kos failed to show assembling data belongs to the same flow over a backbone (i.e. high speed such as SONET or optical fiber). The Examiner disagrees due to the facts that assembles/disassembles of a packet containing data and sending across high speed pathways (such as SONET) is conventional where data from the source (at low speed) need to be grouped (assembled or multiplexed packets together as defined by Newton's dictionary) before sending across the high speed pathways (such as SONET) and then disassembled (segmented, regrouped, or demultiplexed packets as defined by Newton's dictionary) back to its original speed/state. Meaning, the source and destination nodes are communicating at low speed and transporting the

packets in between the two nodes are optical fiber (i.e. high speed such as SONET). It is well known in the industry that a conversion mechanism has to be utilized in order for the destination node to process and manipulate the received packets (such as ATM data rate). Klausmeier teaches the concepts of ATM queues for segmentation and reassembly of data frames where data are placed into a logical queue and constructed with link list pointers associated with memory locations. Before these packets could be transported across the optical high-speed pathways to its final destination, grouping of these packets must occur. The teaching of Kos discloses a method of multiplex/assemble packets at the incoming node of the transport point (i.e. ingress, input of the backbone optical high speed) and then demultiplex/disassemble packets at the outgoing node of the transport point (i.e. egress, the output of backbone optical high speed). Once the data disassemble to its original state (i.e. low speed), the data then would be ready for the destination to process further. See Kos reference for low speed conversion to high-speed conversion (col. 5, lines 1-67); high speed to slow speed conversion (col. 6, lines 1-67, col. 7, 1-45, supporting of high speed OC-12). Kos further discloses the fabric unit (figure 5) can carry STM and ATM payloads and separate these payloads and only deliver the ATM portion to ATM switch (col. 8, lines 1-25, i.e. egress to receiver). Furthermore, the Newton Dictionary defined Multiplex Hierarchy as grouping multiple channels as a group, and 5 groups into a supergroup and 10 supergroups into a mastergroup; Multiplexed Packet Switching (as disclosed in Kos prior art) defined by Newton Dictionary as each node assembles and disassembles a packet containing data from different users. Data within the packet can have a different source and destination than other data in the packet. Demultiplexing defined by Newton Dictionary as recovering signals combined within it; pulls several streams of data out of a bigger, faster stream of data.

Regarding to argument on page 4, lines 7, the applicant argues that Kausmeier does not show assembling short data frames into longer data frame over a backbone. The Examiner disagrees because Kausmeier discloses segments of frame into ATM cells according to AAL5 protocol. As segmentation engine build the ATM cells, dedicated hardware accumulates the CRC for the frame's data and this information will be provided with the final cell of the frame. Kausmeier discloses the process of assembling cells into a frame with CRC for error detection and sending across the optical pathways, backbone (col. 5, lines 44-67).

Regarding to argument on page 4, line 24, page 5, line 9, the applicant argues that Klausmeier does not show deassembly of data at egress node to short data. The examiner disagrees because Klausmeier discloses as shown in figure 5, the queuing circuit consists of ingress (i.e. cell input) and egress (i.e. cell output). The queuing circuit connects to SAR unit (segment/assembly) includes end of frame detection unit. When an end of frame is detected, the local processor will be notified and the frame will be placed in a FIFO for extraction process and configure a DMA channel. The cells are extracted by requesting the queue circuit to begin the extraction when bandwidth is available (col. 6, lines 6-67).

Regarding to argument on page 6, line12, the applicant argues that Kos does not disclose any type of data frame assembly with main protocol header. The Examiner disagrees because Kos discloses the high-speed time multiplex switch (figure 5) can carry STM and ATM payloads and separate these payloads and only deliver the ATM portion to ATM switch (col. 8, lines 1-25, i.e. egress to receiver). This implies that the protocol/service type has to be defined in the header of each payload in order to distinct different types of payload. In addition, it is obvious to have a header with control information and payload for transporting as defined by transmission

standard. Therefore, the 103 rejections for claims 1-30 still holds.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvonne Q. Ha whose telephone number is 703-305-8392. The examiner can normally be reached on Monday-Friday 7a.m.-4p.m. Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ajit Patel can be reached on 703-308-5347. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

YQH

Ajit Patel
Primary Examiner